

Nucleotide and Amino Acid Sequences of Rn HICP

GACGCTTCTG ATCTCCAGAG GACCCTGGGG TGGGACAGGG GCCTTGGCAA GGCTGCAGCC	60
GCTGGGCAGT GGCTTGGAAT GGAGGTCTTT ATTACTGGGA ACTGAGGAGC TAAGAGGCTC	120
CTGTCAGCTT GTCCTAAAGT CTTAGCACTT GTGGTGGCTT GGGCTTCACA CACTGTCAGA	180
CACCTTCGTG GTGGCCTCCA CGGCCTCACC TTCAGGTTTG AAGCTGGCTC CACAAGGGAC	240
ACGGTGAC ATG AGG GGC AGC CCA CTG ATC CAT CTT CTG GCC ACT TCC TTC	290
Met Arg Gly Ser Pro Leu Ile His Leu Ala Thr Ser Phe	
1 5 10	
CTC TGC CTT CTC TCA ATG GTG TGT GCC CAG CTG TGC CGG ACA CCC TGT	338
Leu Cys Leu Leu Ser Met Val Cys Ala Gln Leu Cys Arg Thr Pro Cys	
15 20 25 30	
ACC TGT CCT TGG ACA CCA CCC CAG TGC CCA CAG GGG GTA CCC CTG GTG	386
Thr Cys Pro Trp Thr Pro Pro Gln Cys Pro Gln Gly Val Pro Leu Val	
35 40 45	
CTG GAT GGC TGT GGC TGC TGT AAA GTG TGT GCA CGG AGG CTG GGG GAG	434
Leu Asp Gly Cys Gly Cys Cys Lys Val Cys Ala Arg Arg Leu Gly Glu	
50 55 60	
TCC TGC GAC CAC CTG CAT GTC TGC GAC CCC AGC CAG GGC CTG GTT TGT	482
Ser Cys Asp His Leu His Val Cys Asp Pro Ser Gln Gly Leu Val Cys	
65 70 75	
CAG CCT GGG GCA GGC CCT GGC GGC CAT GGG GCT GTG TGT CTC TTG GAT	530
Gln Pro Gly Ala Gly Pro Gly Gly His Gly Ala Val Cys Leu Leu Asp	
80 85 90	
GAG GAT GAC GGT AGC TGT GAG GTG AAT GGC CGC AGG TAC CTG GAT GGA	578
Glu Asp Asp Gly Ser Cys Glu Val Asn Gly Arg Arg Tyr Leu Asp Gly	
95 100 105 110	
GAG ACC TTT AAA CCC AAT TGC AGG GTC CTG TGC CGC TGT GAT GAC GGT	626
Glu Thr Phe Lys Pro Asn Cys Arg Val Leu Cys Arg Cys Asp Asp Gly	
115 120 125	
GGC TTC ACC TGC CTG CCG CTG TGC AGT GAG GAT GTG CGG CTG CCC AGC	674
Gly Phe Thr Cys Leu Pro Leu Cys Ser Glu Asp Val Arg Leu Pro Ser	
130 135 140	
TGG GAC TGC CCA CGC CCC AAG AGA ATA CAG GTG CCA GGA AAG TGC TGC	722
Trp Asp Cys Pro Arg Pro Lys Arg Ile Gln Val Pro Gly Lys Cys Cys	
145 150 155	
CCC GAG TGG GTA TGT GAC CAG GGA GTG ACA CCG GCG ATC CAG CGC TCC	770
Pro Glu Trp Val Cys Asp Gln Gly Val Thr Pro Ala Ile Gln Arg Ser	
160 165 170	
ACG GCG CAA GGA CAC CAA CTT TCT GCC CTT GTC ACT CCT GCC TCT GCT	818
Thr Ala Gln Gly His Gln Leu Ser Ala Leu Val Thr Pro Ala Ser Ala	
175 180 185 190	
GAT GCT CCT TGT CCA AAT TGG AGC ACA GCC TGG GGC CCC TGC TCA ACC	866

FIGURE 1

Nucleotide Sequence Encoding Mature HICP and the Amino Acid Sequence of Mature HICP

CAG CTG TGC CGG ACA CCC TGT ACC TGT CCT TGG ACA CCA CCC CAG TGC	48
Gln Leu Cys Arg Thr Pro Cys Thr Cys Pro Trp Thr Pro Pro Gln Cys	
1 5 10 15	
CCA CAG GGG GTA CCC CTG GTG CTG GAT GGC TGT GGC TGC TGT AAA GTG	96
Pro Gln Gly Val Pro Leu Val Leu Asp Gly Cys Gly Cys Cys Lys Val	
20 25 30	
TGT GCA CGG AGG CTG GGG GAG TCC TGC GAC CAC CTG CAT GTC TGC GAC	144
Cys Ala Arg Arg Leu Gly Glu Ser Cys Asp His Leu His Val Cys Asp	
35 40 45	
CCC AGC CAG GGC CTG GTT TGT CAG CCT GGG GCA GGC CCT GGC GGC CAT	192
Pro Ser Gln Gly Leu Val Cys Gln Pro Gly Ala Gly Pro Gly Gly His	
50 55 60	
GGG GCT GTG TGT CTC TTG GAT GAG GAT GAC GGT AGC TGT GAG GTG AAT	240
Gly Ala Val Cys Leu Leu Asp Glu Asp Asp Gly Ser Cys Glu Val Asn	
65 70 75 80	
GGC CGC AGG TAC CTG GAT GGA GAG ACC TTT AAA CCC AAT TGC AGG GTC	288
Gly Arg Arg Tyr Leu Asp Gly Glu Thr Phe Lys Pro Asn Cys Arg Val	
85 90 95	
CTG TGC CGC TGT GAT GAC GGT GGC TTC ACC TGC CTG CCG CTG TGC AGT	336
Leu Cys Arg Cys Asp Asp Gly Gly Phe Thr Cys Leu Pro Leu Cys Ser	
100 105 110	
GAG GAT GTG CGG CTG CCC AGC TGG GAC TGC CCA CGC CCC AAG AGA ATA	384
Glu Asp Val Arg Leu Pro Ser Trp Asp Cys Pro Arg Pro Lys Arg Ile	
115 120 125	
CAG GTG CCA GGA AAG TGC TGC CCC GAG TGG GTA TGT GAC CAG GGA GTG	432
Gln Val Pro Gly Lys Cys Cys Pro Glu Trp Val Cys Asp Gln Gly Val	
130 135 140	
ACA CCG GCG ATC CAG CGC TCC ACG GCG CAA GGA CAC CAA CTT TCT GCC	480
Thr Pro Ala Ile Gln Arg Ser Thr Ala Gln Gly His Gln Leu Ser Ala	
145 150 155 160	
CTT GTC ACT CCT GCC TCT GCT GAT GCT CCT TGT CCA AAT TGG AGC ACA	528
Leu Val Thr Pro Ala Ser Ala Asp Ala Pro Cys Pro Asn Trp Ser Thr	
165 170 175	
GCC TGG GGC CCC TGC TCA ACC ACC TGT GGG CTG GGC ATA GCC ACC CGA	576
Ala Trp Gly Pro Cys Ser Thr Thr Cys Gly Leu Gly Ile Ala Thr Arg	
180 185 190	
GTG TCC AAC CAG AAC CGA TTC TGC CAA CTG GAG ATC CAA CGC CGC CTG	624
Val Ser Asn Gln Asn Arg Phe Cys Gln Leu Glu Ile Gln Arg Arg Leu	
195 200 205	
TGT CTG CCC AGA CCC TGC CTG GCA GCC AGG AGC CAC AGC TCA TGG AAC	672
Cys Leu Pro Arg Pro Cys Leu Ala Ala Arg Ser His Ser Ser Trp Asn	
210 215 220	

FIGURE 2

AGT GCT TTC
Ser Ala Phe
225

681

100400 100400

Alignment of the Modular Domains of HICP with the Modular Domains of Other CCN Family Members

MODULE I : IGFBP Domain

	28	45	46	60	61	75	76	90	91	100
1	HICP	QLCRTPT--CP-WTPPQC	-PQGVPLVLDGCGCC	KVCARRLGESCDHLH	VCDPSQGLVCQPGAG	PGHGAVGLL				
2	CTGF	QDCSAQCQ--CAAEAPHC	-PAGVSLVLDGCGCC	RVCAKQLGELCTERD	PCDPHKGLFCDFGSP	ANRKIGVCTA				
3	NOV	LRCPSRCPPKCPIS-PTC	AP-GVRSVLDGCGCC	PVCARQGESCEMR	PCDQSSGLYCDRSAD	PNNQTGICMV				
4	CYR61	-TCPAACH--CPLEA-PKC	AP-GVGLVRDGGCGCC	KVCAKQLNEDCSKTQ	PCDHTKGLGECNFGAS	STALKGICRA				
		* * *	*****	* * *	** *	*				

MODULE II : vWFC Domain

	101	120	121	135	136	150	151	165	166	180
1	HICP	DDGSCEVNGRRYLDGETFKP	NCRVLCRCDDGGFTC	LPLCSEDIVRIPSWDC	PREKRIQVPGKCGPE	WVC				D-Q
2	CTGF	DGAPCVFGGSVYRSGESFQS	SKYQCTCLDGAVGC	VPLCSMDVRI PSPDC	PFRVRVKLPGKCGKE	WVC				DEP
3	NOV	EGDNCVFDGVYRNKEKFEP	NQYFCTCRDQIGC	LPRCQLDVLLPGPDC	PAPRKVAVPGECCEK	WTCGS				DEQ
4	CYR61	EGRPCEYNSRIYQNGESFQP	NCKHQCTCIDGAVGC	IPLCPQELSIPNLGC	PNPRILVKVSGQCCEE	WVCDEDSIKDSLDDQ				
		* *	* *	*	*	*				

MODULE III : TSP1 Domain

	240	250	265	280	298
1	HICP	PCPNWSTAWG	PCSTTCGLGIATRVS	NQNRFCQLEIQRRLC	LPRPCLAAARSHSSWNSAF-
2	CTGF	NCLVQTTEWS	ACSKTCGMGISTRVT	NDNTFCRLEKQSRLC	MVRPCEADLEENIK-KGKK
3	NOV	NCIEQTTEWS	ACSKSCGMGVSTRVT	NRNRQCEMVKQTRLC	IVRPCEQEPEEVTDKKGKK
4	CYR61	KCIVQTTEWS	QCSKSCGTGISTRVT	NDNPECRLVKETRIC	EVRPCGQPVYSSLK-KGKK
		* *	* *	*	*

FIGURE 3

Northern Blot Analysis of HICP Expression in Rat Aorta Smooth Muscle Cells

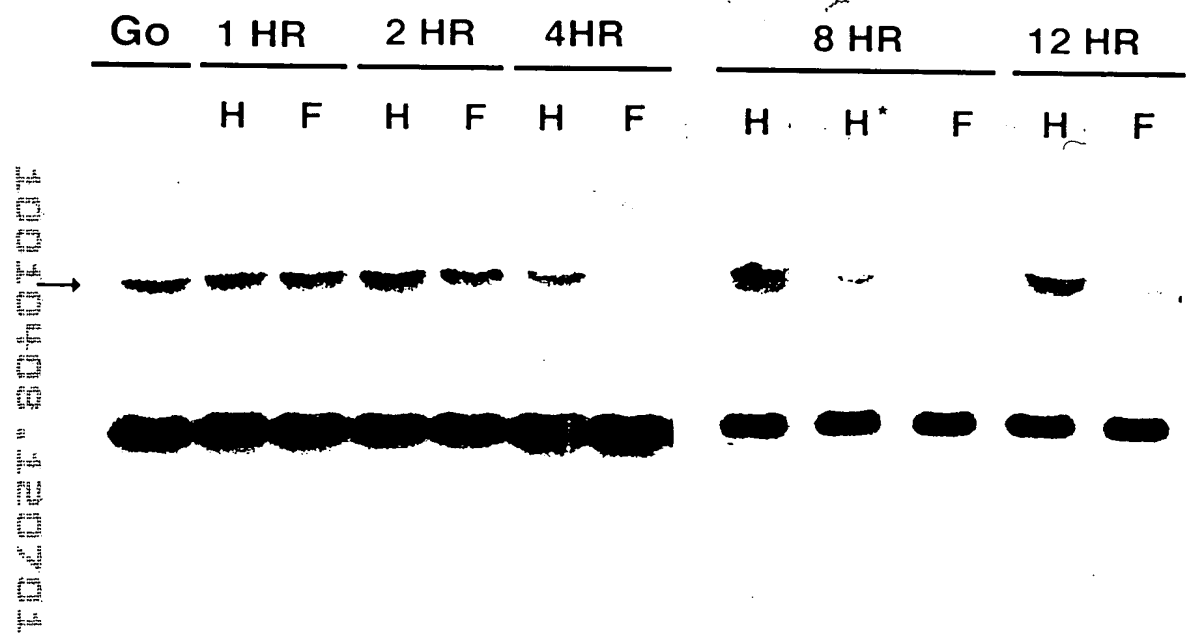


FIGURE 4

DNA Synthesis in Rat Aorta Smooth Muscle Cells

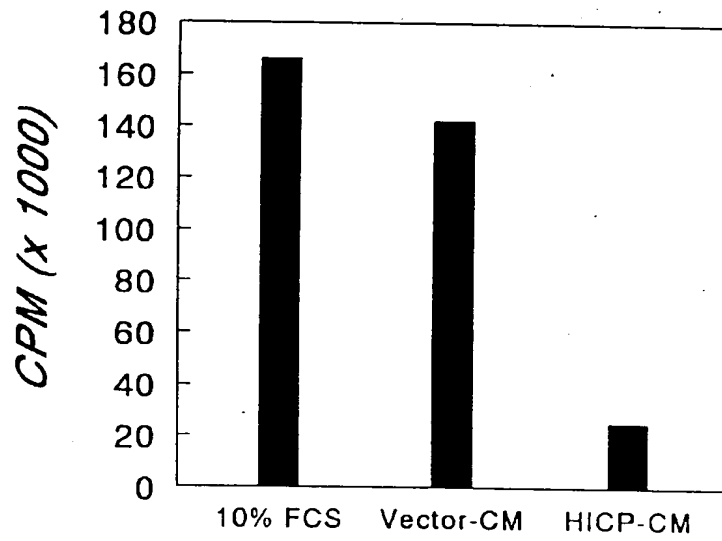


FIGURE 5